UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/846,863	05/01/2001	Philip Goelet	13020-2-D1	5388

7590 02/02/2009

Kalow & Springut LLP
488 Madison Avenue, 19th Floor
New York, NY 10022

EXAMINER	
SISSON, BRADLEY L	

ART UNIT	PAPER NUMBER
1634	

MAIL DATE	DELIVERY MODE
02/02/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/846,863	GOELET ET AL.	
	Examiner	Art Unit	
	Bradley L. Sisson	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *32,36-39,43-45,47-49 and 51-61* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *32,36-39,43-45,47-49 and 51-61* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 May 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because:

Replacement sheets are not properly identified (Fig(s) 1-8B, and

2. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

Replacement Drawing Sheets

Drawing changes must be made by presenting replacement sheets which incorporate the desired changes and which comply with 37 CFR 1.84. An explanation of the changes made must be presented either in the drawing amendments section, or remarks, section of the amendment paper. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). A replacement sheet must include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of the amended drawing(s) must not be labeled as "amended." If the changes to the drawing figure(s) are not accepted by the examiner, applicant will be notified of any required corrective action in the next Office action. No further drawing submission will be required, unless applicant is notified.

Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and within the top margin.

Annotated Drawing Sheets

A marked-up copy of any amended drawing figure, including annotations indicating the changes made, may be submitted or required by the examiner. The annotated drawing sheet(s) must be clearly labeled as "Annotated Sheet" and must be presented in the amendment or remarks section that explains the change(s) to the drawings.

Timing of Corrections

Applicant is required to submit acceptable corrected drawings within the time period set in the Office action. See 37 CFR 1.85(a). Failure to take corrective action within the set period will result in ABANDONMENT of the application.

If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings MUST be filed within the THREE MONTH shortened statutory period set for reply in the "Notice of Allowability." Extensions of time may NOT be obtained under the provisions of 37 CFR 1.136 for filing the corrected drawings after the mailing of a Notice of Allowability.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 32, 36-39, 43-45, 47-49, 51-59 and 61 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the method of claim 60, does not reasonably provide enablement for the identification and use of those single nucleotide polymorphisms in any species of any mammal that have some utility. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

5. As set forth in *Enzo Biochem Inc., v. Calgene, Inc.* (CAFC, 1999) 52 USPQ2d at 1135, bridging to 1136:

> To be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.' " *Genentech, Inc. v. Novo Nordisk, A/S*, 108 F.3d 1361, 1365, 42 USPQ2d 1001, 1004 (Fed. Cir. 1997) (quoting *In re Wright*, 999 F.2d 1557, 1561, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993)). Whether claims are sufficiently enabled by a disclosure in a specification is determined as of the date that the patent application was first filed, see *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384, 231 USPQ 81, 94 (Fed. Cir. 1986).... We have held that a patent specification complies with the statute even if a "reasonable" amount of routine experimentation is required in order to practice a claimed invention, but that such experimentation must not be "undue." See, *e.g.*, *Wands*, 858 F.2d at 736-37, 8 USPQ2d at 1404 ("Enablement is not precluded by the necessity for some experimentation . . . However, experimentation needed to practice the invention must not be undue experimentation. The key word is 'undue,' not 'experimentation.' ") (footnotes, citations, and internal quotation marks omitted). In *In re Wands*, we set forth a number of factors which a court may consider in determining whether a disclosure would require undue experimentation. These factors were set forth as follows: (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims. *Id.* at 737, 8 USPQ2d at 1404. We have also noted that all of the factors need not be reviewed when determining whether a disclosure is enabling. See *Amgen, Inc. v. Chugai Pharm. Co., Ltd.*, 927 F.2d 1200, 1213, 18 USPQ2d 1016, 1027 (Fed. Cir. 1991) (noting that the *Wands* factors "are illustrative, not mandatory. What is relevant depends on the facts.").

The quantity of experimentation necessary

The quantity of experimentation is great- on the order of several man-years with little if any reasonable expectation of ever being fully enabled. Indeed, in the 14 years post the claim for priority, the full enablement still has not been achieved

The amount of direction or guidance presented,

The amount of guidance provided is limited.

The presence or absence of working examples

The specification has been found to provide the following examples:

- Example 1, "Discovery of Equine Polymorphisms," pp. 45-47;
- Example 2, "Characterization of Equine Polymorphisms," pp. 47-50;
- Example 3, "Allelic Frequency Analysis of Equine Polymorphisms in Small Population Studies" (50-60 animals), pp. 50-54;
- Example 5, "Parentage Testing" (equine), pp. 55;
- Example 5, "Identity testing," pp. 56-58; and
- Example 6, "Analysis of a Human SNP," pp. 58-62.

Of the six examples provided, none disclose how one would test and evaluate the myriad "species of interest," much less identify said single nucleotide polymorphisms in a simultaneous manner any number of individuals (claims 32, 36-39, and 43-45, 47-49, and 51-59 and 61).

While the specification does present several examples, such are directed to the analysis of but equine and human DNA and then primarily to the analysis of equine DNA as it relates to parentage analysis (Example 4). Said six examples do not provide an adequate written description of the claimed method whereby one would be able to determine any and all single nucleotide polymorphisms in any and all species of mammals.

As presently worded, the claimed method fairly encompasses performing SNP identification when but one strand is sequenced and/or is present in but only one haploid example. Page 47 of the disclosure, however, teaches, "Differences were concluded to be a DNA polymorphism only if the data was available for both strands, and/or present in more than one haploid example among the five horses tested." The specification does not provide an adequate written description of how to practice the full scope of the invention where but one strand is analyzed

and/or where the frequency of the polymorphism is less frequent than 1 in 5, be the species human, equine, or non-human primate, dogs, cats, cattle, or sheep, as is recited in claims 48 and 53.

Example 1 clearly teaches that equine polymorphisms were identified in the breed of horses known as thoroughbred. The specification has not provided any teaching that polymorphisms found in one breed is also found in another breed, especially when the phenotype of the breeds is highly divergent, which in turn fairly suggests that the genetic makeup of the two equines is highly dissimilar, e.g., the Lithuanian Heavy Draft and the Noma, where the Lithuanian Heavy Draft was first recognized in 1964, with the Noma originating in the seventeenth century. While both are horses, the existence of one for centuries and the non-existence of the other until a few decades ago speaks to their genetic diversity. The specification fails to enable the recognition and use single nucleotide polymorphisms (SNPs) in one breed to in turn recognize an individual in another breed, much less determine paternity.

As presently worded, the method of claims 32, 36-39, 43-45, 47, 59 and 61 fairly encompass the identification of SNPs in any mammal, no matter how diverse. The specification is essentially silent as to how one of skill in the art is to accurately and reproducibly identify those SNPs that are in fact useful. Further, the specification is silent as to how one of skill in the art is to use those meaningful SNPs in virtually any method. It is not enough that the specification enables the isolation or production of a product. The specification must also enable the use of the product. While today there is a great body of work teaching the many uses of SNPs, such was not necessarily the case in 03 November 1993, the effective filing date of the instant application.

The nature of the invention and breadth of claims

In accordance with claims 32, 36-39, 43-45, 47, 59 and 61, one is identifying the presence of single nucleotide polymorphisms (SNP) in any mammal. In the case of claims 32, 36-39, 43-45, 48, 51-55 the SNP does not have to be associated with any specific trait, much less have any specific, substantial, or credible utility. The specification is essentially silent s to how one would be able to identify useful SNPs from those that are not, and to then be able to use them in a method that meets the utility requirements.

As presently worded, the claimed method fairly encompasses the simultaneous detection of an infinite number of SNPs in different target nucleic acid from different mammals. The specification is wholly silent as to how such is to be accomplished, much less teach how one of skill in the art is to recognize useful from non=useful SNPs in each of the myriad mammalian life forms.

Claims 39, 43-45 and 53-55 are drawn to a method of determining allelic frequency at a SNP site, with claim 53 being limited to human, non-human primates, dogs, cats, cattle, sheep and horses. As noted above, the specification does not teach determining SNP frequency in non-human primates, dogs, cats, sheep, cattle, etc., regardless of the SNP being useful or not, much less teaching identification and use of those SNPs that would have utility under 35 USC 101. Claims 56-58 are drawn to determining parentage in equine, with claims 59 and 61 being drawn to determining parentage in any mammal.

The state of the prior art

Nickerson et al., teach in their 2001 article:

> One problem, common to all methods of SNP and mutation detection, is that experimental conditions required for detection of DNA sequence variants depend on the specific DNA sequence to be analyzed. Although algorithms and other calculations have been developed to predict the experimental conditions required to detect DNA sequence variation in a specific DNA sequence, these algorithms do not always provide reliable information and experimental conditions for SNP and mutation detection must be devised empirically. Determination of experimental conditions for detection of DNA sequence variation is difficult when samples containing only wild type sequence are available.

As noted in *In re Fisher* 166 USPQ 18 (CCPA, 1970):

> In cases involving predictable factors, such as that, once imagined, other embodiments can be made without difficulty and their performance characteristics predicted by resort to known scientific laws. In cases involving unpredictable factors, such as most chemical reactions and physiological activity, the scope of enablement obviously varies inversely with the degree of unpredictability of the factors involved.

In view of art-recognized unpredictable nature of the art, greater level of disclosure is required for enablement.

The predictability or unpredictability of the art

As seen above, the predictability of the art is low, as the conditions used to detect the presence of SNP must be devised empirically. The specification provides at best one set of conditions, and those were for a specific breed of horses. There is no showing that the same conditions work for any other breed, much less other species. In view of the 2001 article cited above, there is no reason to expect that one condition would work for sample(s) obtained from another individual, or for sample(s) from a different tissue/source in the same individual.

6. In view of the breadth of scope clamed, the limited guidance provided, the unpredictable nature of the art to which the claimed invention is directed, and in the absence of convincing evidence to the contrary, the claims are deemed to be non-enabled by the disclosure.

Response to argument

7. At page 12 of the response received 06 August 2008, hereinafter the response, assertions are made as to what one of ordinary skill in the art would have construed the claims as encompassing. It is noted that this argument is not accompanied with any factual underpinning, e.g., a declaration.

8. The above argument has been fully considered and has not been found persuasive. Attention is directed to MPEP 2145.

> Attorney argument is not evidence unless it is an admission, in which case, an examiner may use the admission in making a rejection. See MPEP § 2129 and § 2144.03 for a discussion of admissions as prior art.
> The arguments of counsel cannot take the place of evidence in the record. In re Schulze, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965); In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997) ("An assertion of what seems to follow from common experience is just attorney argument and not the kind of factual evidence that is required to rebut a prima facie case of obviousness."). See MPEP § 716.01(c) for examples of attorney statements which are not evidence and which must be supported by an appropriate affidavit or declaration.

9. At page 12 of the response argument is presented that the claims should not be interpreted as encompassing comparisons across species, and directs attention to dependent claims that are limited to a given species, horses.

10. The above argument ahs been considered and has not been found persuasive. For while a dependent claim may well be limited to the evaluation of SNPs in a given species, by default, the

claim from which the claim depends must encompass more, else the dependent claim is not further limiting. In the instant case, the claims do not contain any language that would preclude comparison across species, not jut within species. In the absence of convincing evidence to the contrary, the claims are given their broadest reasonable interpretation. Attention is directed to MPEP 2111:

> **2111 [R-5] Claim Interpretation; Broadest Reasonable Interpretation**
> **CLAIMS MUST BE GIVEN THEIR BROADEST REASONABLE INTERPRETATION**
>
> 415 F.3d at 1316, 75 USPQ2d at 1329. See also< In re Hyatt, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified.

11. At page 14 of the response argument is presented that the office's reliance upon *Genentech v. novo Nordisk* is misplaced. As stated therein:

> The patentees in *Genentech* tried to rely on the level of skill in the art to enable the claim, but at the time of filing the application it was not known in the art how to cleave a fusion protein to make growth hormone, ***where the cleaving of the fusion protein was the novel aspect of the claim***. In contrast, the novel aspect of the amended claims does not include claims to individual SNPs, but methods using the combinations of SNPs as useful genetic markers. (Emphasis in the original.)

12. The above argument has been considered and has not been found persuasive. Contrary to applicant's position, *Genentech* is relevant to the case at hand. While argument is presented that the claimed method requires "using the combinations of SNPs as useful genetic markers," the specification does not teach that applicant knew, at the time of filing, just which markers are in fact useful. In the case of claim 53, for example, the animal could be non-human primate, dogs, cats, cattle, and sheep. None of these life forms has been exemplified in any manner, nor has applicant shown that useful SNPs for each of these life forms was known in the art at the time of

filing. The specification, as noted above, does not teach how one of skill in the art would be able to identify those SNPs that are in fact useful. While the method of claim 32 could result in the identification of SNPs in virtually any life form, the specification still must enable the use of the product so realized. Such has not happened here.

13. For the above reasons, and in the absence of convincing evidence to the contrary, claims 32, 36-39, 43-45, 47-49, 51-59 and 61 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the method of claim 60, does not reasonably provide enablement for the identification and use of those single nucleotide polymorphisms in any species of any mammal that have some utility.

Claim Rejections - 35 USC § 103(a)

14. Under current Office policy, claims rejected under 35 USC 112, first paragraph, cannot also be rejected under 35 USC 103(a) as being obvious in view of art made of record. In view of the preceding rejection of claims under 35 USC 112, first paragraph, the rejection of claims under 35 USC 1039a) is hereby withdrawn.

Conclusion

15. Claim 60 is allowed.

16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

17. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bradley L. Sisson whose telephone number is (571) 272-0751. The examiner can normally be reached on 6:30 a.m. to 5 p.m., Monday through Thursday.

19. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla, Ph.D. can be reached on (571) 272-0735. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

20. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bradley L. Sisson/
Primary Examiner, Art Unit 1634